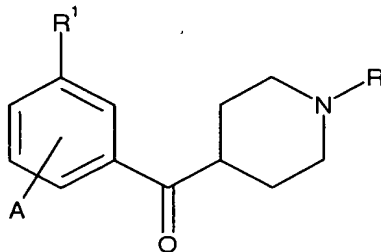


IN THE CLAIMS:

1. A compound of Formula I:



I;

or a pharmaceutical acid addition salt thereof, where;

A is hydrogen, halo, $-OR^4$, NH_2 , or $-CF_3$;

R is hydrogen, C_1 - C_4 alkyl, C_3 - C_6 alkenyl, C_3 - C_6 alkynyl, or $(C_1$ - C_6 alkyl)- Ar^1 ;

R^1 is $-NH-R^2-R^3$, hydroxy, $-OSO_2Ar^2$, or NH_2 ;

Ar, Ar^1 , Ar^2 , Ar^3 , and Ar^4 are an optionally substituted phenyl or optionally substituted heteroaryl;

R^2 is $-CO-$, $-CS-$, or $-SO_2-$;

R^3 is hydrogen, C_1 - C_6 alkyl, optionally substituted with Ar^3 , $-NR^5R^6$, or OR^5 ;

provided R^3 is not hydrogen if R^2 is either $-CS-$ or $-SO_2-$;

R^4 is hydrogen, optionally substituted C_1 - C_6 alkyl, or Ar; and

R^5 and R^6 are independently hydrogen, optionally substituted C_1 - C_8 alkyl, or Ar^4 ;

or R^6 and R^5 combine, together with the nitrogen atom to which they are attached, to form a pyrrolidine, piperidine, piperazine, 4-substituted piperazine, morpholine or thiomorpholine ring;

wherein substituted phenyl is phenyl mono-substituted with a substituent selected from the group consisting of halo, nitro, cyano, amino, trifluoromethyl, trifluoromethoxy, phenyl, benzoyl, C_1 - C_6 alkyl, C_1 - C_6 alkoxy, $(C_1$ - C_4 alkyl) $S(O)_n$, $(C_1$ - C_4 alkyl) $_2$ amino, C_1 - C_4 acyl, or two or three substituents independently selected from the group consisting of halo, nitro, trifluoromethyl, C_1 - C_4 alkyl, and C_1 - C_4 alkoxy;

n is 0, 1, or 2;

heteroaryl is an aromatic or benzofused aromatic 5 or 6 membered ring containing from 1 to 3 heteroatoms selected from the group consisting of nitrogen, oxygen and sulfur;

substituted heteroaryl is heteroaryl substituted with up to three substituents selected from the group consisting of halo, cyano, nitro, hydroxy, C₁-C₄ alkoxy, C₁-C₄ alkyl, (C₁-C₄ alkyl)-S(O)_n-, and phenyl-S(O)_n-;

substituted alkyl is alkyl substituted from 1 to 3 times independently with a substituent selected from the group consisting of halo, hydroxy, phenyl, 2-phenylethylen-1-yl, diphenylmethyl, naphthyl, substituted phenyl, aryloxy, heterocycle, heteroaryloxy, C₂-C₆ alkenyl, C₂-C₆ alkynyl, C₃-C₈ cycloalkyl, C₁-C₄ alkoxy, C₁-C₄ alkoxycarbonyl, phenyl(C₁-C₄ alkyl), substituted phenyl(C₁-C₄ alkyl), and benzofused C₄-C₈ cycloalkyl; and

heterocycle is aromatic or non-aromatic 5 or 6 membered ring containing from 1 to 3 heteroatoms selected from the group consisting of nitrogen, oxygen, and sulfur, said ring being optionally benzofused and said ring or benzofused ring being optionally substituted with up to three substituents selected from the groups consisting of halo, C₁-C₄ alkoxy, C₁-C₄ alkyl, cyano, nitro, hydroxy, (C₁-C₄ alkyl)-S(O)_n-, and phenyl-S(O)_n-.

2. The compound of Claim 1 wherein A is hydrogen.
3. The compound of Claim 1 wherein R is methyl.
4. The compound of Claim 1 wherein R¹ is NH-R²-R³.
5. The compound of Claim 4 wherein R² is C=O.
6. The compound of Claim 5 wherein R³ is Ar³.
7. The compound of Claim 6 wherein Ar³ is 4-fluorophenyl.

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per
R¹

8. The compound of Claim 7 wherein Ar³ is 4-fluorophenyl additionally mono- or disubstituted.

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9. The compound of Claim 8 wherein Ar³ is selected from the group consisting of 2-iodo-4-fluorophenyl, 2-bromo-4-fluorophenyl, 2-chloro-4-fluorophenyl, 2,4-difluorophenyl, and 2-methyl-4-fluorophenyl, and 2,4,6-trifluorophenyl.

10. A pharmaceutical formulation comprising a compound of Formula I of Claim 1, or a pharmaceutical acid addition salt thereof, and a pharmaceutical carrier, diluent, or excipient.

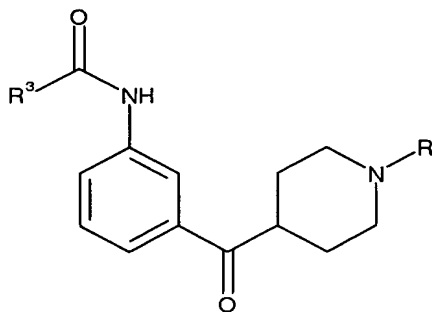
11. A compound of Formula I of Claim 1 when used for activating 5-HT_{1F} receptors in a mammal.

12. A compound of Formula I of Claim 1 when used for inhibiting neuronal protein extravasation in a mammal.

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13. The method according to Claim 11 where the mammal is a human.

14. A process of making the compounds of formula I(a):

I(a)



wherein R^3 is hydrogen, optionally substituted C_1-C_6 alkyl, Ar^3 , $-NR^5R^6$, or OR^5 ;

R^5 and R^6 are independently hydrogen, optionally substituted C_1-C_8 alkyl, or Ar^4 ; or R^6 and R^5 combine, together with the nitrogen atom to which they are attached, to form a pyrrolidine, piperidine, piperazine, 4-substituted piperazine, morpholine or thiomorpholine ring; and

Ar^3 and Ar^4 are independently an optionally substituted phenyl or optionally substituted heteroaryl;

wherein substituted phenyl is phenyl mono-substituted with a substituent selected from the group consisting of halo, nitro, cyano, amino, trifluoromethyl, trifluoromethoxy, phenyl, benzoyl, C_1-C_6 alkyl, C_1-C_6 alkoxy, $(C_1-C_4 \text{ alkyl})S(O)_n$, $(C_1-C_4 \text{ alkyl})_2$ amino, C_1-C_4 acyl, or two or three substituents independently selected from the group consisting of halo, nitro, trifluoromethyl, C_1-C_4 alkyl, and C_1-C_4 alkoxy;

n is 0, 1, or 2;

heteroaryl is an aromatic or benzofused aromatic 5 or 6 membered ring containing from 1 to 3 heteroatoms selected from the group consisting of nitrogen, oxygen and sulfur;

substituted heteroaryl is heteroaryl substituted with up to three substituents independently selected from the group consisting of halo, cyano, nitro, hydroxy, C_1-C_4 alkoxy, C_1-C_4 alkyl, $(C_1-C_4 \text{ alkyl})-S(O)_n$, and phenyl- $S(O)_n$;

substituted alkyl is alkyl substituted from 1 to 3 times independently with a substituent selected from the group consisting of halo, hydroxy, phenyl, 2-phenylethylen-1-yl, diphenylmethyl, naphthyl, substituted phenyl, aryloxy, heterocycle, heteroaryloxy, C_2-C_6 alkenyl, C_2-C_6 alkynyl, C_3-C_8 cycloalkyl, C_1-C_4 alkoxy, C_1-C_4 alkoxycarbonyl, phenyl(C_1-C_4 alkyl), substituted phenyl(C_1-C_4 alkyl), and benzofused C_4-C_8 cycloalkyl;

heterocycle is aromatic or non-aromatic 5 or 6 membered ring containing from 1 to 3 heteroatoms selected from the group consisting of nitrogen, oxygen, and sulfur, said ring

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being optionally benzofused and said ring or benzofused ring being substituted with up to three substituents selected independently from the groups consisting of halo, C₁-C₄ alkoxy, C₁-C₄ alkyl, cyano, nitro, hydroxy, (C₁-C₄ alkyl)-S(O)_n⁻, and phenyl-S(O)_n⁻;

comprising:

- (a) protecting 4-benzoylpiperidine hydrochloride to form an N-protected 4-benzoylpiperidine hydrochloride;
- (b) nitrating the N-protected 4-benzoylpiperidine hydrochloride to form a mixture of N-protected 4-(mono nitrobenzoyl)piperidines;
- (c) deprotecting the N-protected 4-(mononitrobenzoyl)-piperidine mixture to form a mixture of 4-(mononitrobenzoyl)piperidines;
- (d) separating the 4-(3-nitrobenzoyl)piperidine from the mixture of 4-(mononitrobenzoyl)piperidines;
- (e) reducing the 4-(3-nitrobenzoyl)piperidine to form 4-(3-aminobenzoyl)piperidine; and
- (f) acylating the 4-(3-aminobenzoyl)piperidine.

15. The process of Claim 14 wherein steps a) and b) are combined.

16. The process of Claim 14 wherein the source of the protecting group of step a) is trifluoroacetic anhydride.

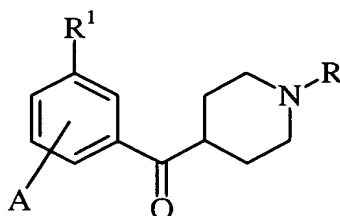
17. The process of Claim 14 wherein the source of the nitronium ion is ammonium nitrate.

18. The process of any of Claim 16 wherein the source of the nitronium ion is ammonium nitrate.

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19. The method according to Claim 12 where the mammal is a human.

20. A method for treating migraine in a mammal comprising administering to a mammal in need of such treatment an effective amount of a compound of formula I:



I;

or a pharmaceutical acid addition salt thereof, where;

A is hydrogen, halo, $-OR^4$, NH_2 , or $-CF_3$;

R is hydrogen, C_1-C_4 alkyl, C_3-C_6 alkenyl, C_3-C_6 alkynyl, or $(C_1-C_6 \text{ alkyl})-Ar^1$;

R^1 is $-NH-R^2-R^3$, hydroxy, $-OSO_2Ar^2$, or NH_2 ;

Ar, Ar^1 , Ar^2 , Ar^3 , and Ar^4 are an optionally substituted phenyl or optionally substituted heteroaryl;

R^2 is $-CO-$, $-CS-$, or $-SO_2-$;

R^3 is hydrogen, optionally substituted C_1-C_6 alkyl, Ar^3 , $-NR^5R^6$, or OR^5 ; provided

R^3 is not hydrogen if R^2 is either $-CS-$ or $-SO_2-$;

R^4 is hydrogen, optionally substituted C_1-C_6 alkyl, or Ar; and

R^5 and R^6 are independently hydrogen, optionally substituted C_1-C_8 alkyl, or Ar^4 ;

or R^6 and R^5 combine, together with the nitrogen atom to which they are attached, to form a pyrrolidine, piperidine, piperazine, 4-substituted piperazine, morpholine or thiomorpholine ring.

21. The method according to Claim 20 where the mammal is a human.
22. The compound of Claim 5 where A is hydrogen and R is methyl.
23. The compound of Claim 6 where A is hydrogen and R is methyl.
24. The compound of Claim 7 where A is hydrogen and R is methyl.
25. The compound of Claim 6 where R^1 is $-NH-R^2-R^3$, R^2 is $C=O$ and R^3 is substituted halophenyl.

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